Loomer Shift User Manual

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End User Licence Agreement

Software Licence Agreement for Shift

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Credits

Development Credits

Shift © 2009 - 2015 Loomer

Developed by	Loomer
Interface by	Kevin Barry - http://www.inquer.co.uk
Tested by	Clifton Cameron kuniklo Scott Simons (rexlapin) taoyoyo

VST PlugIn Technology by Steinberg Media Technologies GmbH. This software is based in part on libpng, zlib, and JUCE.

Requirements

Mac OS X requirements

- Requires Mac OS X v. 10.5 or later
- x86 based processor 1.0Ghz, or above, with SSE
- 512 MB RAM

Windows requirements

- Windows XP or Windows Vista, or above
- Intel x86 based processor 1.0Ghz, or above, with SSE
- 512 MB RAM

Linux requirements

- Intel x86 32-bit or or 64-bit based processor 1.0Ghz, or above, with SSE
- 512 MB RAM

The following shared object libraries are required:

- libfreetype
- libasound
- libXinerama

Shift Overview

What is Shift?

Shift is a real-time diatonic granular pitch shifting and delay effect. Shift has five independent true stereo delay voices with discrete tune, time, feedback, pan, filter, and volume controls. An XY Pad control gives at-a-glance visual feedback as to the state of the delay voices, and allows multiple parameters to be tweaked and played live.

Each voice can be transposed by as much as an octave up or down using both coarse semitone and finely grained cent amounts. In Echo Shift mode, echoes are fed back into the pitch shifter, continually transposing each individual repeat. In Diatonic mode, the accurate and responsive pitch tracker follows any monophonic audio source and tunes the pitch of the delay voice harmonies to remain in key and in scale.

Shift's echoes can either be synced to the host tempo (expressing delay times as musical subdivisions of a beat, with each echo exactly in time with the host) or in free-time mode (allowing fine tuning of the delay times, up to 2 seconds.) With four sync-able low frequency oscillator (LFO) components, each delay voice parameter can be independently modulated, generating a huge range of sounds, from subtle detuning to extreme audio mangling.

True independent stereo processing means that left and right channel separation is preserved. Shift is also capable or running in mono, or even mono to stereo.

Shift comes with over 100 built-in factory presets, each annotated and tagged so you can quickly locate them. Presets can even be ‘hot-swap’ previewed without losing your current sound. And with Partial Preset support, you can effortlessly share settings for the Delay Voices, Grain engine, and Diatonic Tracker between presets.

With optimized audio algorithms that won't overload your processor, rock-solid stability, and easy integration with any MIDI hardware controller, Shift is ideal for live work. With a simple and intuitive interface, flexible preset management, and total parameter automation, Shift fits right into your studio environment.

Plug-in vs Standalone

Depending upon your individual studio setup, Shift can either be used as a plug-in component of a host application, or as a standalone application requiring no other dependencies. Generally, by using the host application's routing flexibility, running as a plug-in allows easier integration with existing plug-in effects and instruments. If this integration is not required, the standalone version, without the extra layer of complexity added by the host consuming resources, performs slightly better.

Presets and MIDI Mapping assignments are identical in both standalone and plug-in versions. This means any sounds created in one format can be opened in the other.

Shift formats

For the Mac, the following formats are provided:

- Standalone Application
- Audio Unit (AU) Plug-In (32-bit and 64-bit)
- VST Plug-in
- RTAS Plug-In
- AAX Plug-in (64-bit)

These formats are available for Windows PC:

- Standalone Application
- VST Plug-in (32-bit and 64-bit)
- RTAS Plug-in
- AAX Plug-in (64-bit)

These formats are available natively for Linux:

- Standalone Application (32-bit and 64-bit)
- VST Plug-in (32-bit and 64-bit)

Supported channel configurations

For maximum flexibility, Shift can be used in several possible input and output channel configurations. Shift is a true stereo effect: left and right channel separation is preserved. The following configurations are possible:

- mono to mono (1 input, 1 output)
- mono to stereo (1 input, 2 outputs)
- stereo to stereo (2 inputs, 2 outputs)

Note that some host applications may not support one or more of these configurations; consult your host's documentation for further details.

Installation and Registration

Mac OS X installation

1. Start the installation process by double-clicking the Shift installer application.
2. Read the introduction screen dialog text. Press **Continue** when you are ready to proceed.
3. Read the Licence Agreement. Click **Continue**, then **Agree** to confirm you have read and agree to the licence terms.
4. Select a destination volume into which to install Shift, and then click **Continue**.
5. From the list of installable components, uncheck any formats that you do not wish to install. Click **Continue** to proceed.
6. To complete the installation, press **Install**.

The components are, by default, installed into the following directories:

- VST plug-in into */Library/Audio/Plug-Ins/VST*
- Audio Unit plug-in into */Library/Audio/Plug-Ins/Components*
- RTAS plug-in into */Library/Application Support/Digidesign/Plug-Ins*
- AAX plug-in into */Library/Application Support/Avid/Audio/Plug-Ins*
- Standalone application into */Applications*
- Documentation into */Library/Documentation/Loomer*

Windows installation

1. Start the installation process by double-clicking the Shift installer application, Setup.exe.
2. Read the welcome screen dialog text. Press **Next** when you are ready to continue.
3. Read the Licence Agreement. Click **I Agree** to confirm that you have read and agree to it.
4. From the list of installable components, uncheck any formats that you do not wish to install. Click **Next** to continue.
5. If you have chosen to include the VST plug-in format, select the directory into which it will install. Click **Next** to continue.
6. Select a directory into which the common files will install. The user documentation and the Standalone application (if selected in the the list of components), will be placed in this location. To complete the installation, press **Install**.

Unless any other directories are selected during the installation, the components are installed into the following directories:

- VST plug-in into the VST plug-ins folder, which is, unless configured otherwise, *C:\Program Files\Steinberg\VSTPlugins*
- RTAS plug-in into *C:\Program Files\Common Files\Digidesign\DAE\Plug-Ins*
- AAX plug-in into *C:\Program Files\Common Files\Avid\Audio\Plug-Ins*
- Standalone application, documentation and default Bank into *C:\Program Files\Loomer \Shift2.* On a 64-bit Windows platform, the Standalone application will install into the *Program Files (x86)* folder.

Linux installation

Shift for Linux is distributed as a standard Linux tarball. To install, extract the package using any unarchiving utility; the following command-line invocation will suffice:

```
tar xzvf Shift2.tar.gz
```

If you have a Linux VST host and have configured your VST Path, the VST plug-in can be moved into the required directory with the following commands:

```
cd Shift2
mv Shift2VST.so $VST_PATH
```

Without the VST Path configured, you will need to ensure that your host uses the Shift directory when searching for VSTs; consult your host's documentation for information on how to do this.

Shift requires the following shared object libraries to be installed:

- libfreetype
- libasound
- libXinerama

Without these libraries installed, the application will not launch. Install the libraries using your distribution's particular package management system, such as apt-get; consult your Linux distribution documentation for more information.

Product registration

Having installed Shift, it will run in evaluation mode with the following limitations:

- User created Presets can be saved, but not loaded.
- Audio output will stop after 30 minutes of continuous use. The only way to continue using Shift is to restart the application.
- Output will be periodically interrupted, approximately every 30 seconds, by a short moment of silence.

These limitations can be removed by purchasing a licence and registering your licence information into the product. Note that registering Shift on a particular machine will remove the evaluation limitations for all Shift plug-in formats installed on this machine; you don't need to individually register all plug-in formats. Licence information will be in the form of a user name and licence key.

To purchase a Shift licence:

1. Launch Shift. This can be either the standalone application, or as a plug-in.
2. From the **Options** menu, choose **Purchase Shift Licence**. This will launch the shop website, from where a Shift Licence can be purchased by clicking **Add To Cart**, followed by **Checkout**. Follow the on-screen prompts to enter your payment details and confirm your purchase.
3. Once you have purchased Shift, you will receive your licence key information via email. It is important to keep this information safe because you will require the licence key if you ever need to reinstall and re-register Shift.

To register your copy of Shift:

1. Choose **Enter Shift Licence** from the **Options** menu.
2. Enter your name in the **Name** field. This must match exactly the name that was used to purchase your Shift licence, including capitalization of letters.
3. Enter your licence key in the **Licence Key** field. This must match exactly the licence that you received when you purchased Shift, including any hyphens. We recommend using Copy and Paste to ensure that the Licence Key is entered exactly as specified in your registration email.
4. Press **OK** to confirm that your name and corresponding licence key have been entered. You will be informed that the application must be restarted in order for registration changes to take effect. If you are currently running the standalone application, close and relaunch it. If Shift is currently running as a plug-in, remove it from the host and add a new instance of it.
5. Shift should now be registered. If the label on the bottom of the interface still reads Unregistered Evaluation, you must have entered the licence information incorrectly. Go back to step 1, paying careful attention that the name and licence key entered match exactly the licence information in the registration email.

If you are having problems registering your installation of Shift, please consult the detailed step-by-step instructions at http://www.loomer.co.uk/support.htm .

For Shift 1 Users

Shift 2 will install alongside earlier versions of Shift. Both versions can be installed and used together, even in the same project.

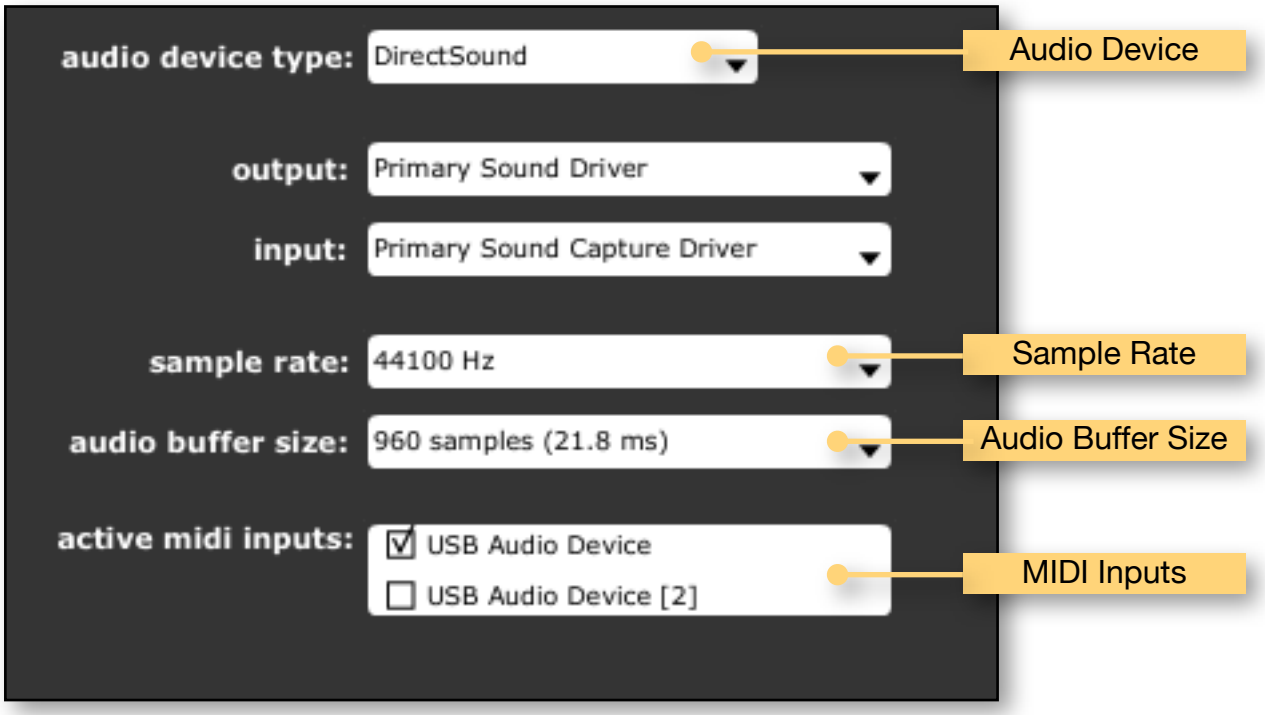
Whilst Shift 2 is a free upgrade for registered owners of Shift 1, it requires its own licence key. If you have a Shift 1 licence and wish to claim your licence for Shift 2, please fill in the form at http://www.loomer.co.uk/request_licence.htm .

Shift 2 will open presets created for Shift 1, but due to the improvements in Shift 2's synthesis engine, they are not guaranteed to sound absolutely identical. In most cases the changes will be minor, and for the better. Any projects you have previously created using Shift 1 will not be changed, even when Shift 2 is installed.

Audio and MIDI Configuration

Setup Audio and MIDI

When running Shift as a Standalone application, you will need to setup your audio and MIDI interfaces. Note that when running as a plug-in, audio and MIDI routing is provided by the hosting application; consult the host's documentation for details. To open the Audio & MIDI Configuration dialog, select **Audio & MIDI Configuration** under the **Options** menu. The following dialog will be displayed:



From this dialog, the following details of your Audio and MIDI setup can be configured:

- **Audio Device**. Select the Audio Device you want to use from the list of available devices. Certain devices tend to perform better than others, so if multiple devices are available, you should favour: on Mac, using Core Audio; on Windows, using ASIO; on Linux, using JACK.

- **Sample Rate**. The Sample Rate dictates the overall quality of the audio output. Using a lower Sample Rate will reduce the presence of high-frequency components. Higher Sample Rates should therefore be preferred. However, be aware that the CPU Usage is directly proportional to the Sample Rate. A good compromise between quality and CPU Usage is 44100Hz, which is the Sample Rate of CD audio. Select the Sample Rate you require from the available list.

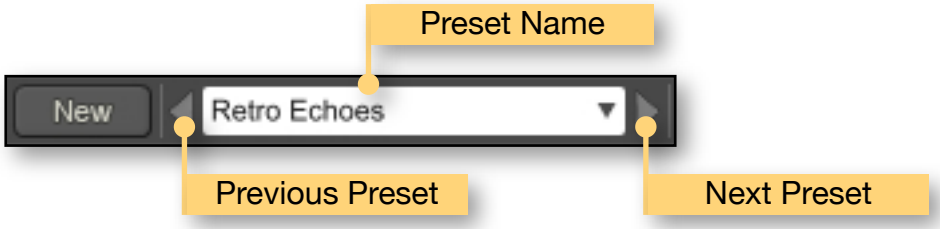
- **Audio Buffer Size**. The Audio Buffer Size governs latency; a smaller buffer means that Shift will respond more quickly to MIDI messages and Parameter changes. However, a smaller Audio Buffer Size will require more CPU Usage. Select the required Audio Buffer Size from the available list. Using too small of an Audio Buffer can overload your computer to the extent that audible clicks are heard. In this case, increase the Audio Buffer Size until clicks are no longer present.

- **MIDI Inputs**. Check any MIDI Input devices that you want to use with Shift.

Preset Management

Parameters and Presets

You can modify the audio output that Shift produces by setting the value of *Parameters*. Each Parameter, such as ** Delay Time, Feedback, or Highpass, will affect a specific element of the sound. The state of all Parameters are collectively called a *Preset*. Presets are given a suitable name, displayed in the Menu Bar, to describe the sound they produce.

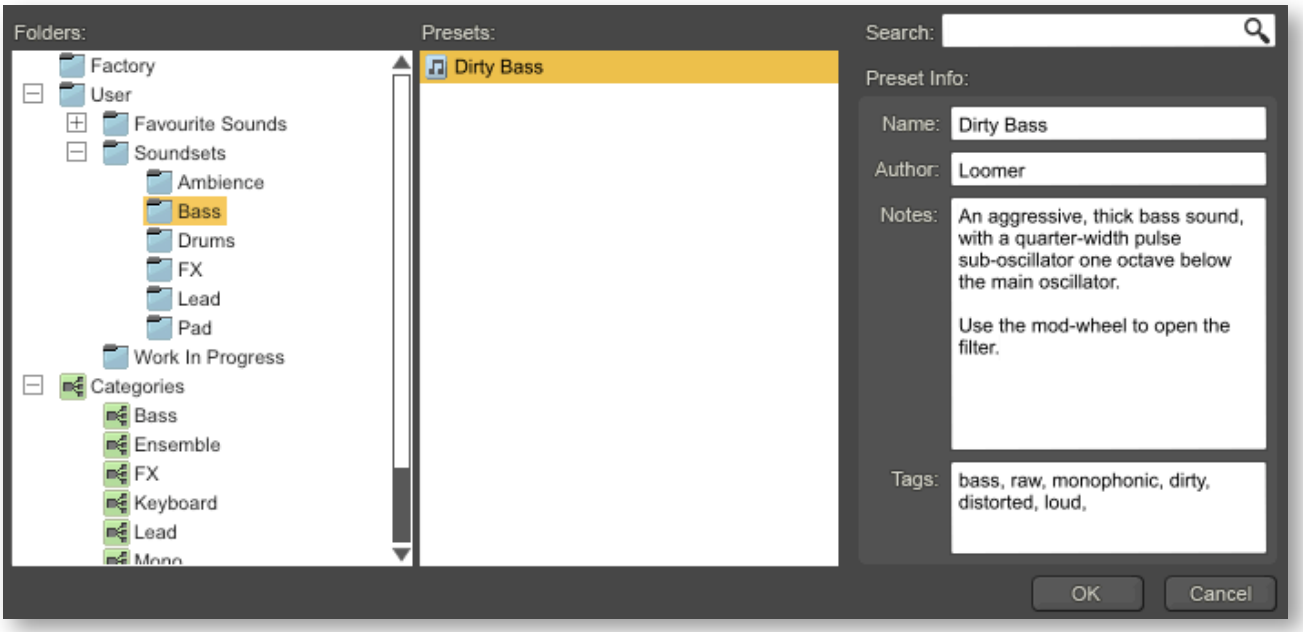


Navigation Controls

If you wish to browse quickly through the Presets, you can do so using the the Previous and Next controls. These controls are context sensitive, only displaying Presets that are relevant to you. For example, if you search for “analogue, bass”, only Presets that match this will be shown in the preset browser. The mouse-wheel can also be used to quickly browse through presets.

Opening Presets

To select a preset from within your preset library, click on the Preset Name in the menu bar to open the Preset Browser.



Presets can be divided into two groups; **Factory**, and **User**. Factory Presets are a collection of example Presets built into Shift. Factory presets can't be overwritten, although you can, of course, edit and save your own presets derived from Factory Presets.

User Presets are stored as individual files on your computer's hard drive. User Presets are found in the following location:

Mac OS X: *~/Library/Application Support/Loomer/Shift/Presets/*
Linux: *$XDG_DATA_HOME/Loomer/Sequent/Presets,* or *~/.local/share/Loomer/Sequent/Presets*
Windows: *My Documents/Loomer/Shift/Presets/* or *Documents/Loomer/Shift/Presets/*

Only registered users can open User Presets. Unregistered versions of Shift are limited to the Factory Presets. Unregistered versions of Shift can, however, still save Presets. Any Presets created in the unregistered evaluation of Shift can be opened by purchasing a licence for Shift.

Preset Hot-Swap

Selecting a Preset in the browser will automatically load the preset: this functionality is called Preset Hot-Swap. Preset Hot-Swap allows you to preview Presets in the context of the current project. If you decide to use the selected Preset, close the browser by pressing *return* or by clicking **OK**. To return to your original Preset, close the browser by pressing *escape* or by clicking **Cancel**.

Preset Meta Data

Presets can have meta data attached to them. Meta data doesn't influence the sound of the Preset, but is used in categorizing, searching, or annotating them. The following meta data is available:

Author: The name of the Preset creator.
Notes: Any additional notes about the Preset, such as influences, playing tips, description, etc.
Tags: Tags are short words that describe the Preset. Examples are: "bass", "distorted", "monophonic", "trance", "quiet", etc. Tags are used to help quickly search for a specific sound.

Searching for Presets

Type keywords into the search field to locate all Presets that match this description. The search will match the keywords in the Preset Name, Author, and Tags fields, and parent folder name.

Categories

Categories allow you to quickly access a subset of your Presets. Categories are listed under the Categories node in the Preset Browser. A Category is simply a shortcut to searching for the Category name; a Category called “Bass” will list all Presets that match the search criteria “Bass”. You are not limited to create Categories based on the type of sound: you can, for example, create Categories for Preset Authors, or indeed for any other search term. Provided you tag your own Presets, they will automatically be added to the correct Category (or Categories: Presets can belong to multiple Categories; a Preset could be both a “Bass” and “Lead” sound, for example.)

Saving Presets

Click **Save** to save the current Preset. Choose the location in which to save the Preset in the Folders window. Press **OK** to actually save the Preset.

XML / FXP / FXB support

Presets in the User Presets folder need to be in either native .xml format, or VST .fxp or .fxb format. Standalone, Audio Unit and RTAS versions can also open .fxp or .fxb files within the browser. Please ensure any files in the User Presets folder have the correct file extension.

Copying & Moving Presets

Presets can be moved or copied to another folder by dragging and dropping a Preset onto the destination folder. By default, Presets will be moved. You can instead copy the Preset by holding *shift* whilst dragging. Note that Presets inside Banks (either .xml or .fxb Banks), can only be copied, not moved. Multiple Presets can be moved or copied at once by selecting more than one Preset.

Default Preset

The Default Preset is automatically opened when a new instance of Shift is created. To specify the Default Preset, right-click on a Preset and choose **Set as Default.**

MIDI Program Change Lists

You can change Presets by using MIDI Program Change commands. This requires a MIDI keyboard or a control surface with the ability to send MIDI Program Change commands; consult your controller’s documentation for details. If using Shift as a plug-in, this functionality is dependent upon the host correctly forwarding MIDI messages to the plug-in; check the documentation provided with your host for details.

To select which Presets are loaded in response to MIDI Program Change commands, you will need to create a MIDI Program Change List. Select **Edit MIDI Program Change List...** from under the **MIDI** menu to display the MIDI Program Change List editor.

To add Presets to the MIDI Program Change List, either double-click on a Preset, or select a Preset and click the **>>** button. Use the **View** button to toggle between viewing the MIDI Program Change List and information on the Selected Preset.

Any Presets in the MIDI Program Change Lists are automatically loaded and cached in memory. This means that Preset changes can be instant. There may be a slight pause after editing the MIDI Program Change List whilst the Presets within it are loaded. When a Preset is saved, any entries in the MIDI Program Change List are saved alongside it. Note that setting a Preset with a MIDI Program Change List as the Default Preset will cause all Presets within the list to be loaded when a new instance of Shift is created.

Create a new Preset

Select **New** to create a new Preset. This Preset will be in the default initialized state.

Compare a changed Preset to the original Preset

Often you'll want to compare a Preset that you have amended to see if it is is actually an improvement on the original. Pressing the **A | B** button temporarily reverts a changed Preset back to its original state. Pressing the **A | B** button a second time returns to the changed Preset. This method allows you to easily contrast the Preset changes you have made to the original Preset.

Restoring Deleted Factory Presets

To reinstate any deleted Factory Presets, right-click on the Factory branch and choose **Resore Factory Presets.**

User folder management

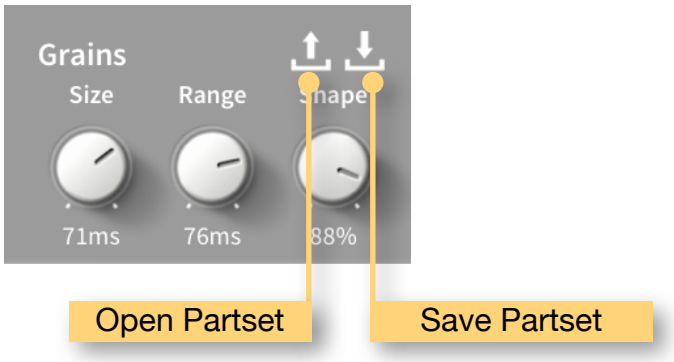
Folder management is performed by right-clicking on a User folder, and selecting an option from the pop-up menu. From here, you can create a **New Folder**, **Rename Folder**, or **Delete Folder**. On Windows or Mac OS X, you can also quickly locate this folder in Finder or Explorer by choosing **Show In Finder / Explorer**.

Partial Presets

As well as full Presets containing the entire state of Shift, you can also create Partial Presets (known as **Partsets**). Partsets contain only the settings for a specified component. Shift support Partsets for the following components: Delay Voice, Grain settings, and Diatonic Tracking sensitivity options.

User Partsets are stored as individual files on your computer's hard drive. They are found in the following location:

Mac OS X: *~/Library/Application Support/Loomer/Shift2/Partsets/*
Linux: *$XDG_DATA_HOME/Loomer/Shift2/Presets,* or *~/.local/share/Loomer/Shift2/Presets*
Windows: *My Documents/Loomer/Shift2/Partsets/ or Documents/Loomer/Shift2/Partsets/*



Creating a Partset

To save the current settings for a component into a Partset template, click on the save icon next to the component. Give the Partset an identifying name, and click **OK** to save it.

Loading a Partset

To load the current settings for a component from a Partset template, click on the open icon next to the component, and select the required Partset from the browser list.

Partset Hot-Swap

Selecting a Partset in the browser will automatically load it: this functionality is called Partset Hot-Swap. Partset Hot-Swap allows you to preview Partset in the context of the current project. If you decide to use the selected Partset, close the browser by pressing *return* or by clicking **OK**. To return to your original Partset, close the browser by pressing *escape* or by clicking **Cancel**.

Restoring Deleted Factory Partsets

To reinstate any deleted Factory Partsets, right-click on the Root branch node in the component's Partset browser, and choose **Restore Factory Partsets.**

MIDI Controller Mapping

MIDI controllers

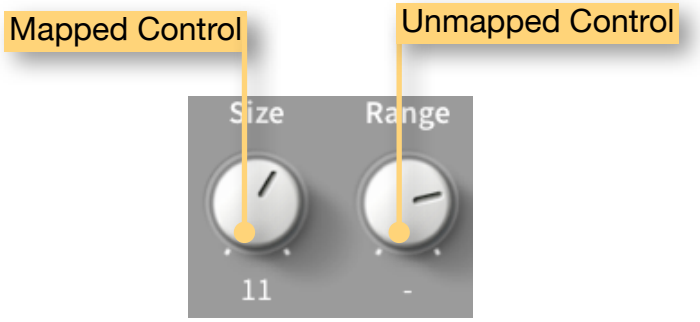
Instead of configuring a Program using a mouse, you can change any Parameter values using a MIDI keyboard or a control surface. This is done by mapping each Parameter to a *MIDI Continuous Controller* (*CC*). A Parameter can only be mapped to a single MIDI controller; the same MIDI control can, however, be mapped to several different Parameters.

MIDI Controller mappings are global; once defined, the same mapping assignments will be used by all Shift Programs. This means that you only need define mappings once for your particular controller.

Display current MIDI controller mappings

To view the current MIDI controller mappings:

1. Enter MIDI Learn Mode by choosing **Start MIDI Learn** under the **Options** menu. Each Parameter's mapped MIDI controller will now be displayed beside it in yellow text. Parameters without any mapping will be labelled -.
2. When you have finished viewing the MIDI controller mappings, choose **Stop MIDI Learn** under the **Options** menu.



Assign MIDI controllers to controls

To map a MIDI controller to a Parameter:

1. Enter MIDI Learn Mode by choosing **Start MIDI Learn** under the **Options** menu.
2. Click on the Parameter you wish to map to a MIDI controller.
3. Turn your MIDI controller. The Parameter should now be labelled with the MIDI CC number of this controller.
4. You can now either:

    - Map another Parameter by repeating these steps from Step 2.
    - Finish mapping Parameters by choosing **Stop MIDI Learn** under the **Options** menu.

Remove MIDI controller mappings from controls

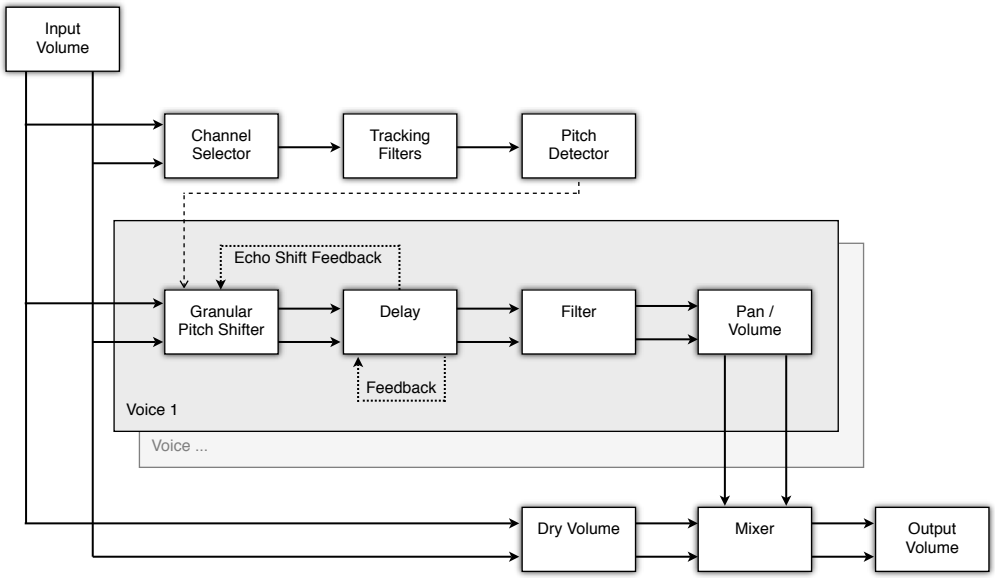
To remove a mapped MIDI controller from a Parameter:

1. Enter MIDI Learn Mode by choosing **Start MIDI Learn** under the **Options** menu.
2. Click on the Parameter from which you wish to remove the mapping. This Parameter will become unmapped, and the CC number label on the Parameter will disappear to reflect this.
3. You can now either:

    - Remove the mapping from another Parameter by repeating these steps from Step 2.
    - Finish removing Parameter mappings by choosing **Stop MIDI Learn** under the **Options** menu.

Shift can be used as either an insert or send effect. When used as an insert effect, Shift is placed directly in a host's audio channel. As a send effect, Shift is placed in a host's auxiliary or bus channel, and a portion of the original signal is fed into the effect. Consult your host's documentation to find out how to add a plug-in as either an insert or as a send effect.

Audio Signal Flow



Interface

Volume

The **Volume** section controls balance the audio levels of signals as they enter and leave Shift. The **Input** control is used to boost or lower the input signal. An input signal that is too quiet can be amplified by increasing the **Input**. Likewise, a signal that is too loud can be attenuated by reducing it. The **Diatonic Pitch Detection** works best on a clean, loud (but not clipped) signal.

The **Output** controls the overall loudness of Shift's audio output. An output signal that is too quiet can be amplified by increasing the **Output**. Likewise, a signal that is too loud can be attenuated by reducing it.

The **VU Meters** can be used to provide visual cues to the current levels: the louder the signal, the higher the meter will register. Too loud of an output will produce digital clipping, a usually undesirable form of distortion. When this occurs, the meter will display a small rectangular white warning indicator. Click the meter to reset the warning display. Note that output digital clipping only occurs at the end of a signal chain: even if the clip indicator shows, reducing the volume outside the plugin (by using the Host's channel volume control, for example) will stop digital clipping.

Delay Voices

Shift has five separate stereo delay voices. Each voice can be configured independently. To select a voice to configure, click on the **1**, **2**, **3**, **4**,or **5** selector button. The currently selected voice is shown in dark gray. All delay voices have the same parameters :

- The **Time** Parameter controls the length of time between repeats. When **Sync** is turned on, the delay time is based upon musical note divisions and will be in step with the host tempo. With Sync off, the time delay is expressed in milliseconds. When time is set to 0, no delay is used and Shift can be used as a real-time processor.

  The denominator for synced time is globally set using the **Time Snap** control. Voice Time settings will snap to the nearest multiple of the Time Snap.

- The **Feedback** Parameter controls the proportion of the signal to be fed back into the delay line. As the value increases, the delayed signals volume will increase. At higher values, it is possible to create a wall of sound using delays that don't decrease in volume when they are fed back into the delay line. Beyond this, it is even possible to create delays that increase in volume. Warning: High Feedback settings can produce dangerously loud signals that can damage both your ears and audio equipment.

- The **Tune** controls select the interval by which the signal will be pitch shifted. Tune is either specified in semitones (when **Diatonic** mode is off) or in diatonic intervals (when **Diatonic** mode is on). By default, the **Tune** control changes in steps of whole chromatic intervals; to make finely grained changes, hold down *shift* whilst dragging the control.

- The **Filter Type** control selects the type of filter for this voice. The filter types, from left to right, are **Off**, **Lowpass**, **Bandpass**, and **Highpass**. **Off** bypasses the filter completely. **Lowpass** removes all frequencies above the cutoff point, **Bandpass** removes all frequencies either side of the cutoff, and **Highpass** removes all frequencies below the cutoff. Turning the filter off will save a small amount of CPU usage.

- **Cutoff** sets the frequency at which the filter response begins. **Res**, an abbreviation for **Resonance**, controls the amount of amplification that occurs to frequencies at the **Cutoff** point.

- The **Pan** parameter allows the delay voice to be balanced in the stereo panorama. Choose **C** to keep the signal centered, **L1%** to **L100%** to place the signal to the left (where **L1%** is slightly left of centre, and **L100%** is to the extreme left). Use **R1%** to **R100%** to place the signal to the right (where **R1%** is slightly right of centre, and **R100%** is to the extreme right).

- The **Volume** controls the relative loudness of the delay voice signal. 0.00dB is known as unity; at this point there is no change in volume entering or leaving a delay voice.

- The **Volume** controls the relative loudness of the delay voice signal. 0.00dB is known as unity; at this point there is no change in volume entering or leaving a delay voice.

The settings for a delay voice can be stored in a **Partial Preset**; see the section on **Partsets** for more details.

Delay Voice Modulation

The **Modulation** controls are used to add time varying changes to Shift. A modulation LFO (low frequency oscillator) produces a constantly wavering signal that can be routed, at various depths, to the delay voices parameter. Each delay voice has its own modulation matrix, allowing each voice to be modulated differently.

The possible **Modulation Destinations** for each voice are **Time**, **Feedback**, **Tune**, **Filter Cutoff**, **Filter Resonance**, **Pan**, and **Volume**.

- With the **Modulation Source** combo control, select **Off** (displayed as **-**) to turn off Modulation for this parameter. or **LFO 1**, **LFO 2**, **LFO 3**, or **LFO 4** to use the corresponding LFO.

- **Modulation Depth** controls the amount that the Modulation Source affects this parameter. At 0, no modulation occurs. The Depth controls are **bidirectional**: parameters can be modulated in both the positive (by using a depth over 0) and negative (by using a depth below 0) direction.

XY Pad

The **XY Pad** serves two purposes: to give an instant overview of the relative parameter settings of all the voices, and to enable multiple parameters to be manipulated and played in real-time.

Two parameters are displayed on the XY Pad, one horizontally, and one vertically. The possible vertical parameters are **Feedback**, **Tune**, **Res**, and **Volume**. The possible horizontal parameters are **Time**, **Cutoff**, and **Pan**. Click on a parameter's name to display the parameter on the pad.

Each voice's value for the selected parameters are represented by a single coloured node on the XY Pad. Each voice's node is uniquely numbered and coloured for easy identification. By moving the node in two dimensions, both parameters can be changed at once. For example, you may wish to tweak **Cutoff** and **Res** together.

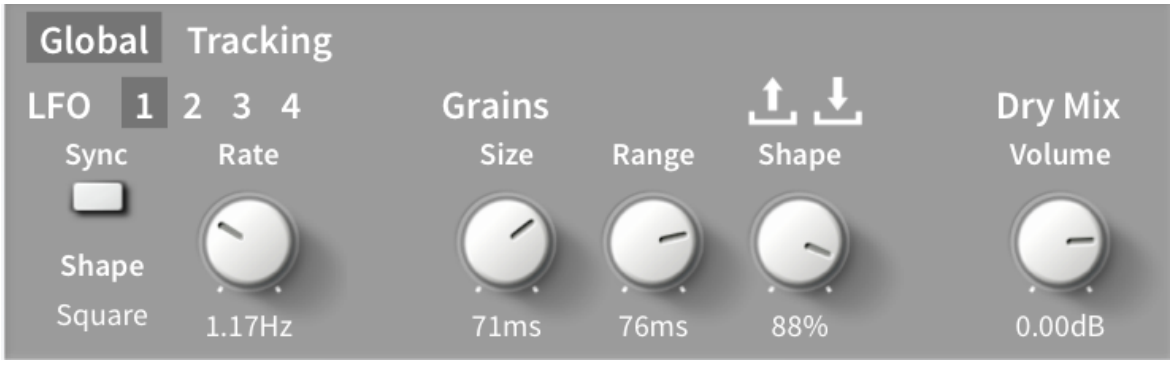
Unless you have a very steady hand, it can be difficult to change a parameter on one axis without affecting the other axis. By enabling the **Horizontal Lock** or **Vertical Lock**, parameters can be frozen so that no more changes are made to that axis from the XY Pad. Note that Parameters on a locked axis can still be changed with the standard voice rotary controls.

Active voices can be disabled by double-clicking on their nodes. Likewise, a voice can be activated at a particular position by double-clicking anywhere on the XY Pad.

Time Snap

Use the **Time Snap** panel to set the base division for tempo based delays. See section on **Delay Voices / Time**.

Global



The **Global Options** panel contains controls for configuring the various global parameters. Use this panel to configure **LFOs**, **Grain** settings, and **Dry Volume**.

LFO

An LFO (low frequency oscillator) produces a constantly wavering signal that can be routed, at various depths, to the delay parameters to create continual changes. Shift has four individual LFOs. LFOs are shared between all delay voices. Each LFO has the following parameters:

- The **Rate** parameter sets the speed at which the LFO oscillates. With **Sync** turned on, the LFO is based upon musical note divisions and will be in step with the host tempo. With Sync off, the Rate is expressed in Hertz (or cycles per second.)

- The **Shape** parameter sets the cyclical pattern of the LFO. Choose from **Sine, Saw, Square**, **Triangle**, or **Random**. Random is equivalent to a bipolar **sample & hold** circuit: it produces a random value (which can be either positive or negative) at the specified rate, holding that value for the entire rate division.

Grain

Shift's Pitch Shifter uses a type of processing called **Granular Synthesis**. This chops incoming audio into tidy fractions of audio called **Grains**. Each Grain can be individually pitched, transposing the audio in pitch, whilst preserving the audio's time scale. The **Grain** panel options configure the duration and shape of the granular synthesis engine.

- The **Size** parameter sets the average width of a grain. Longer settings help preserve the timbre of pitched material, but may soften transients on percussive sources.

- The **Range** parameter sets the average rate of grain generation.

- The **Shape** parameter sets the envelope shape of each grain. At 0%, each grain uses an approximately rectangular envelope - instantly on and off. At 100%, the grain uses a smooth raised cosine window. Values between 0 and 100% allow various envelope shapes between these extremes.

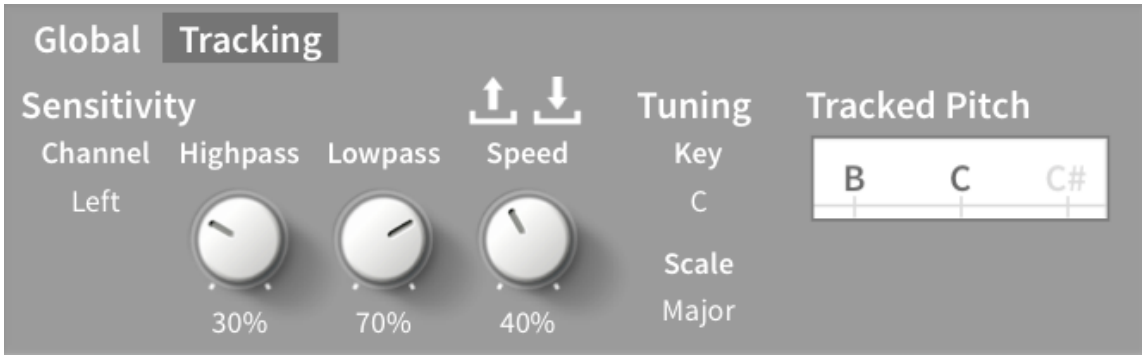
Particular grain settings work better with certain sound sources. A large Size and Range can help preserve pitched material, but generally causes larger latency. A smaller Size and Range works better on percussive sounds, or sounds with short attack transients.

The settings for the grain engine can be stored in a **Partial Preset**; see the section on **Partsets** for more details.

Dry Volume

The **Dry Volume** control sets the amount of unprocessed input that Shift mixes in with the effect's output. Turning the **Dry** parameter to the minimum removes the dry signal completely. Set this to 0.00dB if you want the original signal's volume to be unchanged.

Tracking



The **Tracking** panel options are used for configuring Diatonic Tracking. **Diatonic Pitch Detection** is a process in which the input audio signal is analyzed and pitch information extracted. This is used to tune the delay line transpositions to ensure that delays remain in scale.

For example, when in the key and scale of C Major, if Delay Voice 1 is set to **Diatonic Thirds** playing a C will produce an E (a Major Third interval, or 4 semitones). However, playing a D will produce an F harmony (a Minor Third interval, or 3 semitones.)

Diatonic pitch detection is a complex process that requires a cleanly played, monophonic (one note at a time) signal. The detection will struggle to deduce the pitch of very noisy signals. Pitch detection can be a very CPU intensive activity, particularly when confronted with ambiguously pitched or noisy material. If glitches become apparent in the audio stream when using diatonic pitch detection, you should allow Shift more CPU resources by freezing or bouncing any other intensive tracks in your arrangement. Consult your host's documentation for the steps required for this.

- The The **Channel** parameter selects which stereo input channel to analyze for pitch information. **Left** or **Right** should be chosen depending upon which channel has the cleanest signal. **Mix** can be used in cases where the signal moves across the stereo panorama, but this can be less accurate if the left and right input channels are significantly different.

- **Speed** refines the responsiveness of the pitch detection algorithm. The default value of 40% will perform well for most audio sources, but certain materials may require slightly different values. Lower Speed percentages will mean that the detection works very fast but is more sensitive to pitch deviations and input noise. A higher speed percentage a more relaxed detection, but can introduce slight delay to the detection.

- The **Key** and **Scale** controls tell the detector which key and scale to use to generate harmonies. These should be set to the key and scale of the audio input. The following keys can be selected: **C**, **C#**, **D**, **D#**, **E**, **F**, **F#**, **G**, **G#**, **A**, **A#**, **B**. The following scales can be selected: **Major (Ionian)**, **Dorian**, **Phrygian**, **Lydian**, **Mixolydian**, **Natural Minor (Aeolian)**, **Locrian**, **Harmonic Minor, Melodic Minor (Ascending)**, and **Enigmatic** scales.

- The **Pitch Display** tells you at a glance what the pitch tracker thinks is the currently played pitch. It jitters wildly when it can't smoothly track, and settles confidently on one note when configured properly. Using this, it is quick and easy to configure tracking options that accurately track your playing style/sound.

Diatonic pitch detection is only enabled when one of more delay lines are set to Diatonic mode.

CPU Usage

The total processor resources on a computer are limited, so when Shift increases its CPU usage, there will be less CPU resources remaining for other plug-ins and applications. CPU Usage will differ depending on which Preset is currently loaded, and how that particular Preset is configured.

If your CPU Usage is at 100%, you might notice audio output become temporarily glitchy, or that the user interface becomes sluggish. There are several methods for resolving this:

- Choose a different Preset that has less CPU Usage.
- If running in Standalone mode, you can increase the latency or decrease the sample rate. See section *Setup Audio & MIDI*.
- Reduce the complexity of the current Preset.
- If your host offers Freeze of Offline processing, you might be able to render the audio output in non-realtime.
- If using Diatonic mode, tune the Tracking settings to ensure that the Tracking bandwidth is set correctly.

Latency

Latency is the short processing delay that happens between when you expect audio to be heard, and when it actually is heard. Latency is particularly important when Shift is harmonizing or pitch shifting in real-time. However, in most cases, Shift's latency is so small, to the order of milliseconds, as to be unnoticeable.

It you need to reduce latency, try the following:

- Disable Diatonic mode; pitch detection will always add a few millisecond delay, although it may not always be noticeable.

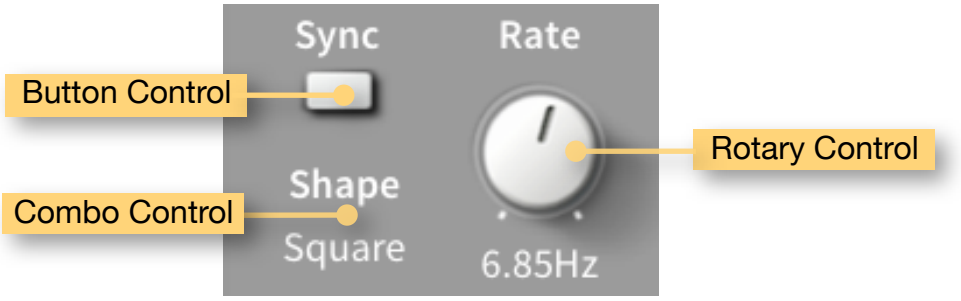
- Reduce the amount of pitch shifting: the further the shift required, the more the latency. Generally, pitch shifting upwards produces more latency than shifting downwards.

• Change the **Grain Size** and **Range**: smaller values produce noticeably smaller latency.

Control types

• Click on a **rotary control** and drag either upwards to increase the value, or downwards to decrease it. Hold down *shift* and drag to make smaller and more precise changes. Hold down *ctrl* and click to return the control to its default value. Rotary controls can also be changed by hovering the mouse cursor over a control and scrolling the mouse-wheel up or down.

• Click on a **button control** to toggle its value between On and Off. Hold down *ctrl* and click to return the control to its default value.



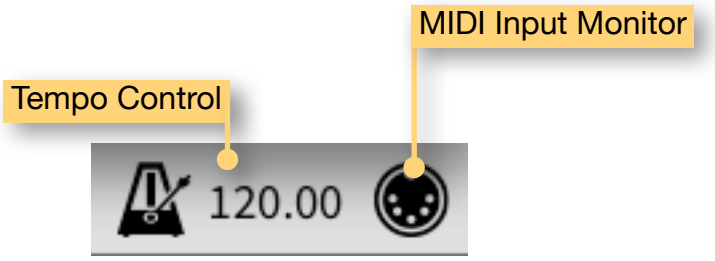
Setting the Interface Size

Shift 2 has a fully resizable interface, allowing it to be scaled to accommodate your own preferences and screen resolution. If supported by the host, Shift 2 can be resized by dragging the resizer on the bottom-right of the interface. Alternatively, several pre-defined size options can be selected under **Options** / **Zoom**.

The interface size can restored to the standard size either by choosing **Options** / **Zoom** / **Default Size** or by holding *shift* + *cmd/alt* + R.

Status Display

Status Display information is displayed at the bottom right area of the Shift interface:



MIDI input monitor

The MIDI monitor flickers to show that a MIDI Message has been received. You can use this to confirm that your MIDI controller is configured correctly for Shift.

Tempo control

The Tempo control only appears when running Shift in Standalone mode; when running as a plug-in, the host application will provide the tempo for Shift. The Tempo control displays the current Tempo, in beats per minute (bpm). It can be changed by either:

- Double-clicking the tempo control, typing the required bpm and pressing return.
- Clicking on the tempo control and dragging either upwards to increase the tempo, or downwards to decrease the tempo.

Contact Details

Loomer Online

Website: http://www.loomer.co.uk

Support and FAQ: http://www.loomer.co.uk/support.htm

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